REMARKS

Applicants gratefully acknowledge the Examiner's determination that Claims 3-5 are drawn to allowable subject matter. In addition, Applicants hereby confirm the Examiner's understanding that all claims of the claimed invention were commonly owned at the time of invention.

Claims 1-17 are currently pending in the application.

In response to the Examiner's objections to Claims 3-5, Claims 3 and 4 have been rewritten in independent form. The Commissioner is authorized to charge attorney's deposit account 50-0510 (IBM Yorktown) $172 for the two additional independent claims created by this amendment.

In response to the Examiner's rejection of Claims 1-2 and 6-17, Claim 1 has been amended by inserting the word "physically" in front of "placing" in line 3 of the claim. Support for such amendment may be found in the Specification at page 9, line 19 through page 11, line 1. No new matter has been added.

The Claimed Invention

The claimed invention provides a method and apparatus to improve the quality of copies of pages of a book, journal, or other bound document, produced by conventional imaging equipment. According to the claimed invention, pages of books may be copied without distortion of the kind that may occur as a result of curvature of the page near the book binding or the distortion in a copied page is corrected using the spacing of reference markings 34 on strips of material 33 applied to the top and bottom edges of a page before copying. The tape is preferably transparent and rather narrow and easily attached to a page to be copied. The first step in the distortion correction procedure is to locate the bars at the top and bottom of the page. A pattern recognition unit 420 locates the pattern of pixels corresponding to the strip in the bitmap image stored in memory 410. The

distortion of the spacing between the imaged bars is computed based on the known distance between the equidistant bars. The computed distortion of the spacing is then input to a distortion correction algorithm. Once the amount of skew is determined in the horizontal and vertical directions, distortion correction processor 440 modifies the bitmap image in memory 410 based on the amount of skew computed by skew amount processor 430 to correct the distortion in the binding area. The output of the distortion correction algorithm generates a corrected image. The distortion correction processor 440 may also optionally delete the bars so that they are not printed in the copy. The corrected image is finally copied.

The claimed invention addresses various problems, including but not limited to problems relating to ease of use, which arise in connection with conventional approaches to distortion correction. Such conventional approaches require complicated specialized hardware equipment, such as light projectors and height measurement devices, whereas the claimed invention dispenses with such complicated specialized hardware equipment by providing an approach that employs conventional equipment such as copiers and scanners, supplemented by additional software. The claimed invention is able to do so because it relies on physically printing or placing reference patterns onto the document to be copied, so that reference markings may be acquired using conventional imaging equipment.

Claims 1, 6, 8-14, and 16-17 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,760,925 to Saund et al., while Claims 2, 7, and 15 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Saund et al. Applicants traverse these rejections on the basis that the claims of the claimed invention are not anticipated or suggested by Saund et al.

Rejection of Claims 1, 6, 8-14, and 16-17 Under 35 U.S.C. § 102(b)

Independent Claims 1, 12, and 17, and dependent Claims 6, 8-11, 13-14, and 16

have been rejected under 35 U.S.C. § 102(b) as anticipated by Saund et al., which describes a platenless book scanning system with a general imaging geometry. Saund is similar in significant ways to the prior art discussed in the Specification of the Application, because Saund et al. employs complicated specialized hardware equipment such as light projectors while the claimed invention provides a solution that can be used with conventional scanners and copiers supplemented by additional software. Saund et al. require a light projection system to project light onto the manuscript and image acquisition systems to capture that image. Such an approach requires specialized setup to position the book and cannot be adapted to a conventional copier or scanner without major changes to the equipment. (*See* Saund et al., Figure 1, set forth below; *cf.* Applicants; Figure 8, set forth below) Furthermore, it is not clear that the image acquisition system in a conventional copier or scanner, as used in the claimed invention, can capture the projected light stripes of Saund et al., since such image acquisition systems rely on reflected light.

Claims 1, 6, and 8-11. The Examiner has found that "Saund et al. disclose a method for correcting distortion in an image of a scanned document, comprising: placing a reference pattern on a page." (Office Action at 2) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 1, 6, and 8-11 of the claimed invention:

> Here, light striping is used to identify the shape of bound document 10 on platform 8. More specifically, light striping is performed in order to detect the three-dimensional shape of a page and thereby correct distortions cause by image perspective, skew, and compression or elongation introduced by oblique viewing angles of image acquisition system 20. The light-stripe source 22 can contain a laser or an ordinary light bulb that projects an image of a slit.

(Saund et al., column 6, lines 28-35) Thus, it is apparent that Saund et al. requires

complicated specialized hardware equipment, such as light projectors. Claims 1, 6, and 8-11, by contrast, employ conventional equipment, supplemented by additional software. This is possible because the claimed invention relies on physically printing or placing reference patterns onto the document to be copied, so that reference markings may be acquired using conventional imaging equipment. As noted above, Applicants are not aware of any reason to believe that conventional imaging equipment, which relies on reflected light, would be able to capture the projected light stripes of Saund et al.

The Examiner has also found that Saund et al. disclose "obtaining an image of said page containing printed information at least a portion of which is distorted." (Office Action at 2) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 1, 6, and 8-11 of the claimed invention:

> At step 118, an image (I.sub.2) of the bound document 10 is acquired without the projection of a light stripe across it.

(Saund et al., column 7, lines 52-54) Where Saund et al. teach acquisition of an image "without the projection of a light stripe across it," the claimed invention claims "detecting said reference pattern in the image indicative of the distortion." (Claim 1, line 6) Thus, where Saund et al. teach a step in the acquisition of an image in which the image is acquired "without the projection of a light stripe," the claimed invention acquisition of the image with "said reference pattern in the image." Thus, the claimed invention provides that the image, once it has been acquired, may finally be printed either with or without the reference pattern. (*See* Claim 8, which makes specific provision for printing without the reference pattern) By contrast, Saund et al., in a portion cited by the Examiner in support of rejection, teach acquisition of images without reference patterns, as discussed herein, as part of a process in which an image taken with light striping turned on is compared with an image taken with light striping turned off. (*See* Saund et al., Figure 3, set forth above)

The Examiner has found that Saund et al. disclose "detecting said reference

pattern in the image indicative of the distortion." (Office Action at 2) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> At step 114, an image (I.sub.1) of a light stripe projected across bound document 10 is acquired by image acquisition system 20.

(Saund et al., column 7, lines 49-51) There in no reference in Claims 1, 6, and 8-11 of a "light stripe" such as is taught by Saund et al.

The Examiner has found that Saund et al. disclose "computing an amount of the distortion in said image by analyzing the detected reference pattern." (Office Action at 2_3) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> With continued reference to FIG. 3, at step 122 the image processing system 36 determines a page shape transform (T.sub.2) of the current page shape using the image (I.sub.1) acquired at step 114.

(Saund et al., column 7, lines 57-60) Thus, the referenced Figure 3 of Saund et al. employs two images of each page, one with light stripe and one without:

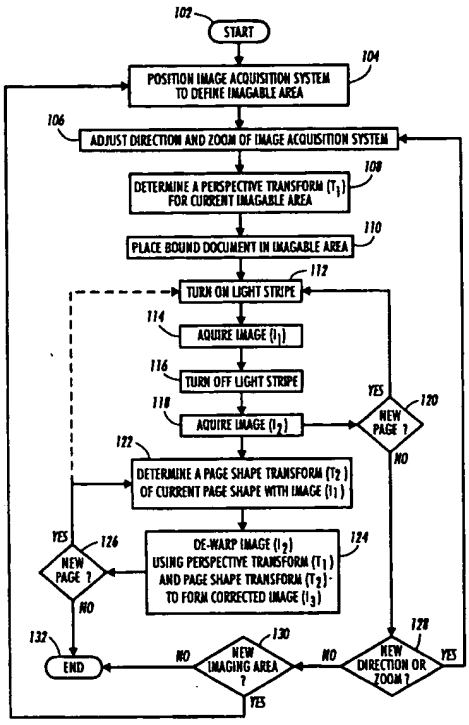


FIG. 3

(Saund et al., Figure 3, elements 114 and 118) By contrast, the claimed invention works with a single image "by analyzing the detected reference pattern." (Claim 1, lines 7-8)

The Examiner has found that Saund et al. disclose "correcting the distortion in said image based on the amount of distortion computed in said computing step." (Office Action at 3) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> At step 124, the image (I.sub.2) is de-warped to form a corrected image (I.sub.3) using the perspective transform (T.sub.1)

> determined at step 108, and the page shape transform (T.sub.2) determined at step 122.

(Saund et al., column 7, lines 60-63) As in the previous example, Figure 3 of Saund et al. shows that elements 122 and 124 relate to a process in which two images of each page, one with light stripe and one without, are employed. The claimed invention, by contrast, works with a single image, which includes the reference pattern. (*See* Claim 1, lines 6-10)

The Examiner has found that Saund et al. disclose "[s]aid reference pattern include a series of markings having a predetermined spatial relationship." (Office Action at 3) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> In alternate embodiments, the three-dimensional surface of a bound document can be measured using stereo vision, laser rangefinding, sonar rangefinding, projection of a grid, or an alternate mechanical means.

(Saund et al., column 6, lines 38-42) Notwithstanding the findings of the Examiner, it is clear from the language of the disclosure that Saund et al. do not teach a "reference pattern," a "series of markings" or a "predetermined spatial relationship." (Office Action at 3; *see also* Claim 6, lines 1-2) In addition, the claimed invention does not measure a "three-dimensional surface of a bound document" as taught by Saund et al., since the claimed invention works by comparing a two-dimensional reference pattern to a copied image of the two-dimensional reference pattern. (*See* Claim 1, lines 4-10)

The Examiner has found that Saund et al. disclose "deleting said reference pattern from said image . . . and outputting said image as a corrected image free of said distortion . . . . [s]aid outputting step [potentially] includes oneof printing said corrected image, transmitting said image along a communication line, and storing said image in a computer" (Office Action at 3; *see also* Claims 8-9) The portion of the disclosure of

Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> The corrected image data 44 is either stored on storage device 28 or output directly to a peripheral device through application driver 46. Application driver 46 transmits corrected image data 44 to any peripheral device adapted for displaying, storing, or reproducing as hardcopy corrected image data 44.
>
> * * *
>
> At step 116, the light stripe projection system 22 is turned off. At step 118, an image (I.sub.2) of the bound document 10 is acquired without the projection of a light stripe across it.

(Saund et al., column 6, lines 29-34, 51-54) As noted above, Figure 3 of Saund et al. (which the referenced portion of Saund et al. discusses) teaches the acquisition of two distinct images, one acquired with light stripe turned on and one acquired with light stripe turned off (Saund et al., Figure 3, elements 112-118) Thus, Saund et al. does not provide for "deleting said reference pattern from said image" (Office Action at 3; *see also*, Claim 8, lines 1-2), and the printed or electronic output images of Claims 8-9 are therefore different from what is taught in Saund et al.

The Examiner has found that Saund et al. disclose "[s]aid distortion results from a curvature of a page in the vicinity of the binding" and "[s]aid page is a page in a bound volume and the distortion in said page results from a curvature in said page caused by a binding of said bound volume." (Office Action at 3) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claims 1, 6, and 8-11 of the claimed invention:

> In addition, image quality is often poor due to loss of focus, uneven illumination, and distortion caused by curvature of a page in the

vicinity of the binding.

(Saund et al., column 1, lines 43-46) The language of the disclosure of Saund et al., however, is describing the type of problem that may be addressed by the invention disclosed therein. Saund et al. do not describe "[t]he method of claim 1, wherein said distortion results from a curvature located in an interior portion of said page." (Claim 10) Nor do Saund et al. describe "[t]he method of claim 1, wherein said page is a page in a bound volume and wherein the distortion in said page results from a curvature in said page caused by a binding of said bound volume." (Claim 11)

For the foregoing reasons, Applicants respectfully submit that Claims 1, 6, and 8-11 are not anticipated by Saund et al.

Claims 12-14 and 16. The Examiner has found that "Saund et al. disclose a distortion correction processor adapted for use with a digital imaging device, said distortion correction processor comprising: an optical recognition unit which locates a reference pattern in a document image." (Office Action at 3-4) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> Image acquisition system 20 in a preferred embodiment is a high resolution digital color camera having internal optics, shown generally by reference numeral 21, that focus an image on internal focal plane 23. The high resolution camera contains an array of active photosensors that convert optical image data into electrical signals. Photosensor arrays are well known in the art and include two-dimensional flat panel detectors and one-dimensional and two-dimensional charge coupled devices (CCDs).
>
> * * *
>
> At step 114, an image (I.sub.1) of a light stripe projected across bound document 10 is acquired by image acquisition system 20.

(Saund et al., column 6, lines 6-14 and column 7, lines 49-51) Thus, the disclosure of Saund et al. does not teach a "distortion correction processor ," "adapted for use with a digital imaging device," "an optical recognition unit" or "locates a reference pattern in a document image." (Claim 12, lines 1-3) To the contrary, the cited portion of the disclosure of Saund et al. teaches a preferred embodiment in the form of "a high resolution digital color camera having internal optics," which is not analogous to the claimed invention, since a "digital imaging device" is not generally understood to be analogous to a "camera." While the Examiner emphasizes that Saund et al. teaches "with internal optics," that term does not appear in Claims 12, 13, 14, or 16.

The Examiner has found that Saund et al. disclose "a distortion computation unit which determines an amount of the distortion in said image by analyzing said reference pattern." (Office Action at 4) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> With continued reference to FIG. 3, at step 122 the image processing system 36 determines a page shape transform (T.sub.2) of the current page shape using the image (I.sub.1) acquired at step 114.

(Saund et al., column 7, lines 57-60) As noted above, Figure 3 of Saund et al. (which the referenced portion of Saund et al. discusses) teaches the acquisition of two distinct images, one acquired with light stripe turned on and one acquired with light stripe turned off (Saund et al., Figure 3, elements 112-118) By contrast, the claimed invention uses only one image. Thus, Saund et al. does not teach "determines an amount of the distortion in said image by analyzing said reference pattern" analgous to what is done in the claimed invention. (Office Action at 4; *see also*, Claim 12, lines 4-5).

The Examiner has found that Saund et al. disclose "a bitmap processor which corrects the distortion in said image based on the amount of distortion computed by the distortion computation unit." (Office Action at 4) The portion of the disclosure of Saund

et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> At step 124, the image (I.sub.2) is de-warped to form a corrected image (I.sub.3) using the perspective transform (T.sub.1) determined at step 108, and the page shape transform (T.sub.2) determined at step 122.

(Saund et al., column 7, lines 60-63) Thus, there is no reference in the cited portion of the disclosure of Saund et al. of "bitmap processor," or "corrects the distortion in said image based on thea mount of distortion computed by the distortion computation unit." In addition, as noted above, Figure 3 of Saund et al. (which the referenced portion of Saund et al. discusses) teaches the acquisition of two distinct images, one acquired with light stripe turned on and one acquired with light stripe turned off (Saund et al., Figure 3, elements 112-118) By contrast, the claimed invention uses only one image, as discussed above. Thus, the teachings of Saund et al. in this regard do not provide anything anticipating the claimed invention.

The Examiner has found that Saund et al. disclose "[t]he reference pattern is located at a predetermined position within the image." (Office Action at 4) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

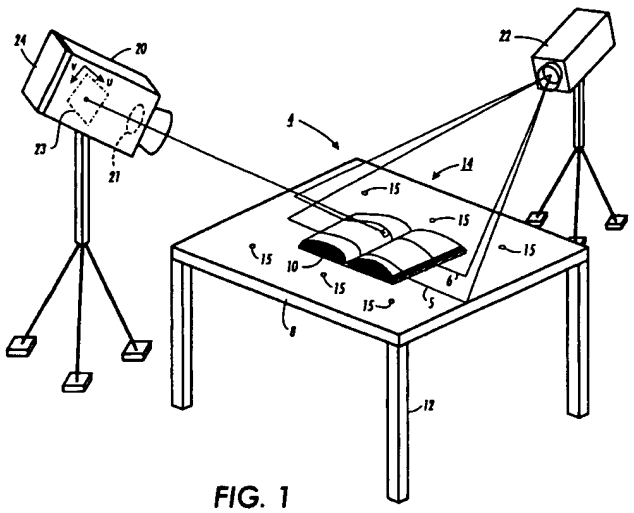


FIG. 1

(Saund et al., Figure 1, elements 5, 6, and 10) It is evident from the drawing referenced by the Examiner that the disclosure of Saund et al. employs "light stripes" (Office Action at 4) and not a "reference pattern . . . located at a predetermined position within said image" (Office Action at 4; *see also* Claim 13) as in the claimed invention:

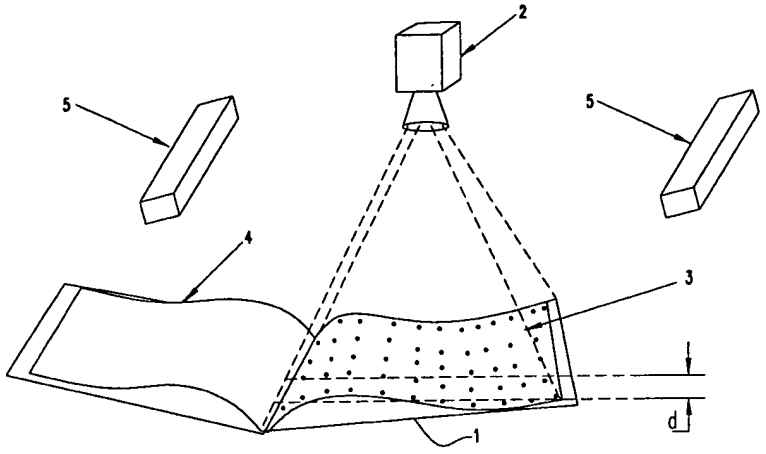


FIG.8

The Examiner has found that the disclosure of Saund et al."includes a series of markings having a predetermined spatial relationship." (Office Action at 4) The portion of the disclosure cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> In alternate embodiments, the three-dimensional surface of a bound document can be measured using stereo vision, laser rangefinding, sonar rangefinding, projection of a grid, or an alternate mechanical means.

(Saund et al., column 6, lines 38-42) Thus, there is no discussion in the cited portion of the disclosure of Saund et al. of "a series of markings" or "having a predetermined spatial relationship." In addition, the use of "a series of markings" is inconsistent with the

teaching of Saund et al., which employs "light stripes" (Office Action at 4) rather then physical markings, as in the claimed invention. Thus, the teachings of Saund et al. in this regard do not provide anything anticipating Claims12, 13, 14, or 16.

The Examiner has found that Saund et al. disclose "[s]aid optical recognition unit locates a second reference pattern in said document image at a second location within said image . . . wherein said distortion computation unit computes an amount of the distortion in said image by analyzing said reference pattern and said second reference pattern." (Office Action at 4) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> For example, FIG. 8 is a graph of traces 62 and 63 of the light stripes 5 and 6 shown in FIG. 1. The traces 62 and 63 of light stripes 5 and 6 are defined in world coordinates (world-x, world-y, and world-z). The two light stripes 5 and 6 which are recorded as raw data in an image (I.sub.1), are evaluated by page shape transform generator 40 to define traces 62 and 63 that represent the distributions formed by light stripe projection system 22 on bound document 10. The traces 62 and 63 are traced, transformed, and smoothed as set forth in steps 156, 158, and 160 in FIG. 7. In addition, if a spine region is detected in each profile 62 and 63, the regions is fit with a parametric model of a page shape as set forth at step 164. After linear interpolation and integration of the traces 62 and 63, graphs shown in FIGS. 9, 10, or 11 are generated. These graphs, which represent lookup tables, provide mappings between the world coordinate system (X,Y,Z) and the page coordinate system (page x, page y).

(Saund et al., column 13, lines 26-42) Thus, there is no discussion in the cited portion of the disclosure of Saund et al. of "an optical recognition unit," a "second reference pattern

in said document image at a second location within said image," a "distortion computation unit" which "computes an amount of the distortion in said image by analyzing said reference pattern and said second reference pattern." (Office Action at 4; *see also* Claim 16, lines 1-5) In addition, because of the fundamental differences between the teachings of Saund et al. and the claims of the claimed invention, there does not appear to be a basis for drawing analogies between the cited portion of Saund et al. and Claims12, 13, 14, or 16.

The Examiner has found that Saund et al. disclose "wherein said bitmap processor corrects distortion in said image based on the amount of distortion computed by said distortion computation unit." (Office Action at 4) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not reveal an analogy between what is taught by Saund et al. and Claims 12-14 and 16 of the claimed invention:

> At step 124, the image (I.sub.2) is de-warped to form a corrected image (I.sub.3) using the perspective transform (T.sub.1) determined at step 108, and the page shape transform (T.sub.2) determined at step 122.

(Saund et al., column 7, lines 60-63) Thus, there is no discussion in the cited portion of the disclosure of Saund et al. of a "bitmap processor" which "corrects distortion in said image based on the amount of distortion computed by said distortion computation unit." (Office Action at 4; *see also* Claim 16, lines 6-7) In addition, as noted above, Figure 3 of Saund et al. (which the referenced portion of Saund et al. discusses) teaches the acquisition of two distinct images, one acquired with light stripe turned on and one acquired with light stripe turned off (Saund et al., Figure 3, elements 112-118) By contrast, the claimed invention uses only one image, as discussed above. Thus, there does not appear to be a basis for drawing analogies between the cited portion of Saund et al. and Claims12, 13, 14, or 16.

For the foregoing reasons, Applicants respectfully submit that Claims 12-14 and 16 are not anticipated by Saund et al.

Claim 17. Finally, in connection with Claim 17 of the claimed invention, the Examiner has found that

> Saund et al. disclose a digital imaging system, comprising: a document having a reference pattern . . . an optical scanner which scans said document on a support surface of said optical scanner . . . a distortion correction processor which receivess said image from said optical scanner, said distortion correction processor including: (a) an optical recognition unit which locates said reference pattern is said image . . . (b) a distortion computation unit which determines an amount of the distortion in said image by analyzing said reference pattern . . . (c) a bitmap procesor which corrects the distortion in said image based on the amount of distortion computed by the distortion computation unit . . . and an output for outputting the corrected image to an output device.

(Office Action at 5) The portion of the disclosure of Saund et al. cited by the Examiner in support of this conclusion, however, does not support the finding that Saund et al. anticipate Claim 17:

> Image acquisition system 20 in a preferred embodiment is a high resolution digital color camera having internal optics, shown generally by reference numeral 21, that focus an image on internal focal plane 23. The high resolution camera contains an array of active photosensors that convert optical image data into electrical signals. Photosensor arrays are well known in the art and include two-dimensional flat panel detectors and one-dimensional and two-dimensional charge coupled devices (CCDs).

* * *

The corrected image data 44 is either stored on storage device 28 or output directly to a peripheral device through application driver 46. Application driver 46 transmits corrected image data 44 to any peripheral device adapted for displaying, storing, or reproducing as hardcopy corrected image data 44.

* * *

At step 114, an image (I.sub.1) of a light stripe projected across bound document 10 is acquired by image acquisition system 20.

* * *

At step 118, an image (I.sub.2) of the bound document 10 is acquired without the projection of a light stripe across it.

* * *

With continued reference to FIG. 3, at step 122 the image processing system 36 determines a page shape transform (T.sub.2) of the current page shape using the image (I.sub.1) acquired at step 114.

* * *

At step 124, the image (I.sub.2) is de-warped to form a corrected image (I.sub.3) using the perspective transform (T.sub.1) determined at step 108, and the page shape transform (T.sub.2) determined at step 122.

(Saund et al., column 6, lines 6-14; column 7, lines 29-34; column 7, lines 49-51; column 7, lines 52-54; column 7, lines 57-60; and column 7, lines 60-63) It is clear from the plain language of the disclosure that Saund et al. do not teach "a digital imaging system," "a document having a reference pattern," "an optical scanner which scans said document on a support surface of said optical scanner" (in this regard, the very title of Saund et al. declares itself to be "platenless"), a "distortion correction processor which receives said image from said optical scanner," an "optical recognition unit which locates

said reference pattern is said image," "a distortion computation unit which determines an amount of the distortion in said image by analyzing said reference pattern," "a bitmap procesor which corrects the distortion in said image based on the amount of distortion computed by the distortion computation unit," or "an output for outputting the corrected image to an output device." (Office Action at 5; *see also* Claim 17) The disclosure of Saund et al. appears to be limited to matters applicable to the "light stripe" approach that it teaches without reference to the approach of the claimed invention, which employs referenced patterns which are physically marked on paper, as discussed extensively above. As a result, there does not appear to be a basis for drawing analogies between the cited portion of Saund et al. and Claim 17.

For the foregoing reasons, Applicants respectfully submit that Claim 17 is not anticipated by Saund et al.

Rejection of Claims 2, 7, and 15 Under 35 U.S.C. § 103(a)

Dependent Claims 2, 7, and 15 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Saund et al., which describes a platenless book scanning system with a general imaging geometry. Because these claims are dependent claims, the foregoing discussion of the rejection of Claims 1, 6, 12, and 14, from which Claims 2, 7, and 15 depend, is incorporated by reference. Applicants respectfully traverse the rejection on the basis that Claims 2, 7, and 15 are not suggested by Saund et al. For example, if features of Claims 2, 7, and 15, which involve physically marking reference patterns, were added to the invention described in the disclosure of Saund et al., which is based on use of light stripes as discussed above, then the invention of Saund "would be rendered inoperable for its intended purpose" (*In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)) because it would not be possible to turn off a printed reference pattern to obtain a second, unmarked image. (*See* Saund et al., Figure 3, elements 114 and 118, set forth above) The same problem does not arise in connection with the claimed invention, which works "by

analyzing the detected reference pattern" in a single image without making a comparison to an image taken without the reference pattern. (*See* Claim 1, lines 7-8) Markings of the type employed by Claims 2, 7, and 15 could not be projected in the manner of light stripes, as required by the disclosure of Saund et al. (*see* Saund et al., Figure 1, set forth above; *cf.* Figure 8 of the Applicants' drawings, set forth above), in large part because Claims 2, 7, and 15 require physically marking a reference pattern.

For the foregoing reasons, Applicants respectfully submit that Claims 2, 7, and 15 are not suggested by Saund et al.

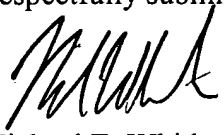
Conclusion

In view of the foregoing, it is respectfully requested that the application be reconsidered, that Claims 1-17 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Deposit Account 50-0510 (IBM-Yorktown).

Respectfully submitted,



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